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OPERATOR'S MANUAL

DUAL BAND BIDIRECTIONAL AMPLIFIER

MODEL A289

P/N 001-0289-001
(CABLE POWERED)
AND
P/N 001-0289-002
(LOCAL POWERED)

APRIL 2002

Toronto, Ontario

GUARANTEE

This unit is guaranteed for a period of one year from the date of shipment against failure due to defective parts or improper assembly.

This guarantee is limited to replacement of defective material and does not cover damages or other costs resulting from the use of this material whether used correctly or otherwise.

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SECTION 1. GENERAL INFORMATION

1.1 INTRODUCTION

1.1.1 Scope of Manual - This manual is intended to familiarize personnel working with the Dual Band Cellular/PCS Bidirectional Amplifier A289 with all pertinent aspects of the amplifier. Included in this manual are a brief physical description, a technical summary, installation information and operating data.

1.1.2 Purpose of Equipment - The A289 amplifier is used as a drop-in booster for cellular and PCS signals carried on 50 ohm coax cable. The amplifier will simultaneously amplify signals in the Cellular and PCS transmit bands in one direction and the Cellular and PCS receive bands in the opposite direction. A typical use of the A289 is to provide Cellular and PCS phone coverage in underground installations.

1.1.3 Physical Description - The bidirectional amplifier, shown in Figure 3-1, is designed to be mounted on a flat vertical surface. The unit has two N connectors for connection to the distribution cable and two BNC test ports to check RF signals. Color coded indicators provide visual display of the unit's operating status.

1.1.4 Electrical Description - The bidirectional amplifier provides approximately 20 dB of gain for signals in the 824 - 849 MHz and 1850 - 1910 MHz bands in the direction of J1 to J2 (antenna to base) and the same amount of gain for signal in the 869 - 894 MHz and 1930 - 1990 MHz bands in the opposite direction (J2 to J1).

1.1.4.1 - The cable powered unit (P/N 001-0289-001) is powered through the distribution cable. The unit provides DC continuity from J1 to J2 to allow powering of downstream amplifiers from upstream power sources such as PS212 and PS213.

The local powered unit (P/N 001-0289-002) is powered through a 5-pin DIN receptacle. The P.G. Electronics power source PS288 should be used for local powering. The unit provides DC continuity from J1 to J2 to allow powering of downstream amplifiers from upstream power sources such as PS212 and PS213. Local power is isolated from J1 and J2.

1.1.4.2 - The unit monitors bias conditions of active devices in the RF path and monitors downlink power in both bands. If one of these devices draws more or less than a predetermined limit, or if the RF downlink power is low then the FAULT indicator will go on. Under normal operating condition only the green NORMAL indicator will be on.

1.1.4.3 - If a FAULT condition is detected the unit transmits a low frequency identification code along the cable center conductor. The burst transmission is repeated at approximately 80 second intervals, while a fault condition exists.

1.1.4.4 - If a NORMAL condition exists in the amplifier a low frequency OK identification code will be transmitted on the cable at intervals of approximately 80 minutes.

1.1.4.5 – The unit has an adjustable attenuator in each band to allow operation at reduced gain. The attenuator is settable in 1 dB steps up to 15 dB either manually or by using an optional AUTOSET control board.

1.2 TECHNICAL SUMMARY

TABLE 1-1

Performance Characteristics and
Salient Features of the A289 Cellular/PCS Bidirectional Amplifier

Parameter	Specification			
1. Input Power:	15 - 24 VDC @ 3.5A Max. (use PS288 for local powered unit)			
	Cellular		**PCS**	
2. Frequency Range*: (MHz)	Uplink: 824-849	Downlink: 869-894	Uplink: 1850-1910	Downlink: 1930-1990
3. Gain:	20dB ±1.5dB			
4. Impedance	50 Ohms			
5. VSWR	2:1 Typical, 3:1 Maximum			
	Cellular		**PCS**	
6. Composite Output Power Rating** (dBm)	Uplink: +9	Downlink: +24	Uplink: +4	Downlink: +24
7. Output 1dB Compression Point (dBm)	Uplink: +17	Downlink: +33	Uplink: +12	Downlink: +33
8. 3rd Order Output Intercept Point (dBm)	Uplink: +32	Downlink: +45	Uplink: +27	Downlink: +45
9. Attenuator Range	0 to 15 dB in 1 dB steps (in each band)			
10. Environmental Limits	(a) Temperature Range: -30°C to 60°C operating (b) Relative Humidity: to 90%			
11. Dimensions and Weight				
(a) Overall Dimensions:	9.8”(249mm) L x 6.7”(170mm) W x 6.7”(170mm) H			
(b) Mounting Hole Dims:	9.0”(229mm) x 5.0”(127mm)			
(c) Weight:	6.0. lb (2.7 kg)			
12. Connectors:				
RF Input/Output	Type N Female			
RF Test Input/Output	Type BNC Female			
DC supply	Common with RF Input/Output (P/N 001-0289-001) or DC power jack (P/N 001-0289-002)			

NOTES: ***** Specifications apply only across the customers actual bands, not across the whole cellular and PCS spectrum.

** Refer to Table 1-2 for definition of composite output power rating.